

PREPARING FOR HIKING AND ROCK-CLIMBING AT ALTITUDE

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Exposure to altitude with or without exercise usually results in body dehydration.

Psychological and physiological preparation for exercise at altitude involves consideration of maintaining body warmth in a cool to cold environment with progressively lower oxygen content (partial pressure) as altitude increases. However, this discussion will focus on altitudes below 14,000 ft where supplemental breathing oxygen is not required for sojourns of healthy people. Background information and helpful advice for those who exercise in the cold can be found in selected articles in the 2001 Winter Issue of this Newsletter: M.B. Ducharme, Get ready for outdoor winter play: prepare yourself for the cold; C. O'Brien, Think layers when dressing for exercise in the cold; S.G. Rice and R. Ellis, Let it snow, let it snow, let it snow – but be aware of winter hazards; and L.B. Mayers, Exercise – induced asthma.

Psychological preparation. It is important for hikers and climbers to realize that oxygen deficiency above 10,000 ft can induce signs and symptoms of hypoxia such as disorientation, irritability, impaired concentration and decision making, as well as mental and physical fatigue which are amplified progressively with increasing altitude and with dehydration levels beyond 2% loss of body weight.

Physiological preparation. Training for trekking in the field requires the usual preparation for muscle seasoning involving walking and perhaps jogging both uphill, and especially downhill which can cause excessive muscle and joint strain – sometimes

resulting in injury. Sturdy, well broken-in hiking boots with cleated soles and proper layers of socks are mandatory. Slow ascent to altitudes above 10,000 ft is preferable to rapid ascent to allow the body time to acclimatize.

Dehydration. Body fluid deficit is probably the most insidious symptom of short-term exercise at altitude; the other is high-altitude pulmonary edema. When under stress the body's homeostatic response seems to maintain a 1-2% level of dehydration by inhibiting fluid intake. This is termed involuntary dehydration because a person drinks to satiety an insufficient fluid volume involuntarily to restore fluid loss – hence the fluid deficit. Voluntary drinking to satiety usually restores about half the fluid deficit thus requiring forced fluid intake to restore some of the remaining deficit. Altitude exposure often induces anorexia which can accentuate involuntary dehydration because eating facilitates drinking. Rest periods (10 min per hour) during hiking can facilitate eating and drinking. In survival situations where food and liquid are sparse, the best plan is to drink nothing for the first 24 hours; then one quart of liquid per day thereafter to reduce urinary output to obligatory levels.

Survival preparation. Short treks over well-marked or familiar pathways are usually benign unless someone is injured. Hikers should always travel with as light a load as possible. Preparations for day-long or overnight excursions over unfamiliar territory should provide for survival scenarios in the event of injury or getting lost. Such preparations should include a detailed contour map of the territory, first-aid supplies, a cell-phone, telling others of your plans and route, adequate food and fluids for twice the

time of the outing, sufficient clothing and shelter for rain and temperature extremes and snow, at least one heavy knife or small ax to cut saplings, and at least three people in the party – one to tend the injured or incapacitated and the other to seek help. Plan ahead!